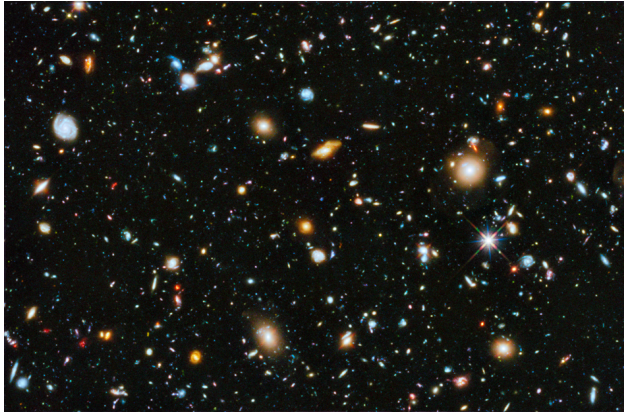


National Aeronautics and
Space Administration



ASTROPHYSICS



2019 Astrophysics Senior Review

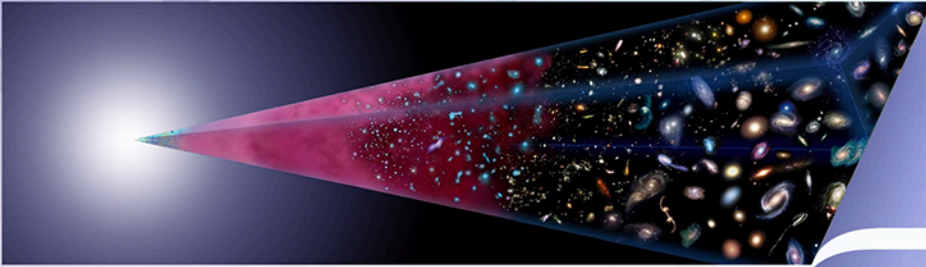
Presented to:
Astrophysics Advisory Committee

Jeffrey Hayes

Program Executive for Operating Missions
Astrophysics Division
Science Mission Directorate

April 12, 2018

Why Astrophysics?



How did our universe begin and evolve?

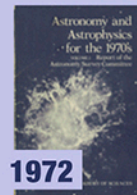


How did galaxies, stars, and planets come to be?



Are we alone?

Enduring National Strategic Drivers



Astrophysics is humankind's scientific endeavor to understand the universe and our place in it.

Astrophysics Missions in Operation

Hubble 4/90 NASA Strategic Mission  Hubble Space Telescope	Chandra 7/99 NASA Strategic Mission  Chandra X-ray Observatory	XMM-Newton 12/99 ESA-led Mission  X-ray Multi Mirror - Newton	Spitzer 8/03 NASA Strategic Mission  Spitzer Space Telescope	SOFIA 5/14 NASA Strategic Mission  Stratospheric Observatory for Infrared Astronomy	ISS-CREAM 8/17 NASA Research Mission  Cosmic Ray Energetics And Mass
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Swift 11/04 NASA MIDEX Mission  Swift Gamma-ray Burst Explorer	Fermi 6/08 NASA Strategic Mission  Fermi Gamma-ray Space Telescope	Kepler 3/09 NASA Discovery Mission  Kepler Space Telescope	NuSTAR 6/12 NASA SMEX Mission  Nuclear Spectroscopic Telescope Array	ISS-NICER 6/17 NASA Explorers Mission of Oppt'y  Neutron Star Interior Composition Explorer
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Senior Review Paradigm:

NASA conducts regular reviews of its operating science missions in order to assess their continued science productivity and whether their operations should be continued through approval of a mission extension. The *NASA Authorization Act of 2005 (P.L. 109-155)* states that **“The Administrator shall carry out biennial reviews within each of the Science divisions to assess the cost and benefits of extending the date of the termination of data collection for those missions that have exceeded their planned mission life time.”** The *NASA Transition Authorization Act of 2017 (P.L. 115-10)* modified the cadence to be triennial reviews.

These reviews of operating missions are NASA’s highest form of peer review, as the subject is not a single science investigation, or even a single space mission, but rather a portfolio of operating missions.

The reviews of operating missions are referred to as senior reviews, in recognition of the high level of the peer review.

Senior Review 2019 (from the TOR):

“The Astrophysics Senior Review Subcommittee is a subordinate group (hereinafter, “Subcommittee”) of the Astrophysics Advisory Committee (APAC), a stand-alone advisory group established under the Federal Advisory Committee Act (FACA). The Subcommittee has been established at the discretion of the Director, Astrophysics Division, following consultation with the Associate Administrator, Science Mission Directorate.

Hubble Space Telescope

The Subcommittee will conduct a senior review for NASA of astrophysics operating missions. The purpose and scope of the senior review is to provide an independent assessment of the cost and benefits of extending the termination date of the suite of operating missions in the NASA Astrophysics portfolio.”

Senior Review 2019

- Chandra X-ray Observatory (Chandra)
- Fermi Gamma-ray Space Telescope (Fermi)
- Hubble Space Telescope (Hubble)
- Neutron star Interior Composition ExploreR (NICER)
- Nuclear Spectroscopic Telescope Array (NuSTAR)
- Stratospheric Observatory for Infrared Astronomy (SOFIA)
[pending clarification of Congressional language]
- Neil Gehrels Swift Observatory (Swift)
- Transiting Exoplanet Survey Satellite (TESS)
- X-ray Multi-mirror Mission-Newton (XMM-Newton)

Senior Review 2019

NASA Astrophysics Advisory Committee

Senior Review Subcommittee

Rest-of-
Missions
Panel

Chandra
Panel

Hubble
Panel

SOFIA
Panel
[TBC]

Senior Review 2019 Schedule

2018:

- APAC approves Terms of Reference for the Senior Review Subcommittee (this meeting)
- Establish Senior Review Subcommittee, including appointment of subcommittee members compliant with FACA
- Draft call for proposals issued
- Final call for proposals issued

2019:

- Senior Review proposals due
- Rest-of-missions, Chandra, Hubble, and SOFIA [TBC] panels meet.
- Reports from Rest-of-missions, Chandra, Hubble, and SOFIA [TBC] panels due to Senior Review Subcommittee
- Senior Review Subcommittee meets.
- Senior Review Subcommittee reports to APAC.
- APAC delivers formal recommendations to NASA.
- NASA response to Senior Review and direction to projects.

